DOCKET SECTION

UPS-T-3

BEFORE THE
POSTAL RATE COMMISSION

POSTAL RATE AND FEE CHANGES, 1997	:	DOCKET NO. R97-1

DIRECT TESTIMONY OF J. STEPHEN HENDERSON ON BEHALF OF UNITED PARCEL SERVICE

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INTRODUCTION

My name is J. Stephen Henderson. I am an economist and a principal of Putnam, Hayes & Bartlett, Inc. ("PHB"). PHB is an economic and management consulting firm with offices in various cities in the United States. PHB also has a New Zealand subsidiary, an Australian subsidiary, and an affiliate in England. My place of business is in PHB's Washington D.C. office, 1776 Eye Street, N.W., Washington, D.C. 20006.

I joined PHB in 1996. Prior to that time and beginning in February 1989, I held various positions in the Office of Economic Policy ("OEP") of the Federal Energy Regulatory Commission ("FERC"). From the Summer of 1993 to October 1996, I was the Associate Director of OEP. The Office supported the Commission's consideration of individual cases, such as merger applications, power pooling arrangements, transmission pricing applications, and requests for

market-based pricing authority, and also was responsible for the development of industry-wide policy matters. I was responsible for supervising and coordinating a staff of about 12 senior economists who conducted economic and policy studies, especially of the electricity industry. During my tenure, I helped to coordinate a major policy initiative that has opened the industry to competition at the wholesale level. This was FERC's open transmission access policy as embodied in its recent Orders 888 and 889 that have fostered significant restructuring activity in the industry and have promoted competitive initiatives at the retail level in several states.

Since joining PHB, my professional activities have continued to center on competitive issues. My assignments on electric power industry matters have involved the definition of relevant markets and the measurement of market power, the restructuring of electric power markets, and the development of Independent System Operators.

From 1981 to 1989, I was a senior institute economist at the National Regulatory Research Institute ("NRRI") in Columbus, Ohio. NRRI is sponsored by the National Association of Regulatory Utility Commissioners ("NARUC"). NRRI provides a broad program of research into regulatory matters for the regulatory agencies that belong to NARUC, particularly for state public utility commissions. At NRRI I wrote extensively on the economics of regulation.

I have been an assistant professor of economics at the Ohio State University and an instructor at the Air Force Institute of Technology. The courses I

have taught include public finance, microeconomics, macroeconomics, managerial economics, and mathematics for economists.

I received a B.S. in international affairs from the Air Force Academy and an M.A. in economics from Georgetown University. I hold a Ph.D. in economics from the University of Wisconsin.

PURPOSE OF TESTIMONY

I have been asked to review the Postal Service's pricing methodology in this case. My testimony discusses the statutory framework for postal pricing decisions and addresses the role of economic theory within that framework. As a result of my review, I recommend rate levels for Express Mail, Priority Mail, and Parcel Post that are different from those proposed by the Postal Service.

POSTAL RATEMAKING POLICY

A. Postal Pricing Objectives

The Postal Reorganization Act contains nine factors or policy objectives that govern postal rate determination:

Objective (1): Fair and Equitable Rates. Section 3622(b)(1) states that postal rates should be "fair and equitable." From a regulatory policy perspective, the use of this phrase to articulate Congress' first pricing objective is significant. Statutes regulating electricity, natural gas, transportation, and other public utilities typically require regulators to set "just and reasonable" rates. The

phrase "just and reasonable" has come to be identified with regulatory approaches designed to provide consumers with efficient rates.[1] In recent years, a "just and reasonable" price has been interpreted by some regulatory agencies as the price that would result where the seller does not have market power.[2]

In contrast, the phrase "fair and equitable" implies a broader regulatory concept involving social objectives that go beyond those encompassed by the "just and reasonable" terminology. In appropriate circumstances, a "fair" postal rate could be a market-driven rate; however, the "equitable" terminology clearly suggests that the Commission should balance various social objectives, including those spelled out in the other eight parts of Section 3622(b). That is, Objective (1) calls for a reasoned regulatory balancing of the various social and economic objectives listed in the Act.

Objective (2): Value of Mail Service. The Act allows postal rates to reflect the value of the service rendered to particular mailers and recipients of mail. The Commission has developed a judgmental approach to reflecting the value of mail service objective in postal rates, taking into account demand elasticities and the intrinsic value of the service provided.

Objective (3): Cost Recovery. Section 3622(b)(3) requires that each class of mail pay its attributable costs plus a reasonable portion of all other costs. It is the only objective that is a requirement and not merely regulatory guidance.

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1. Permian Basin Area Rate Cases, 390 U.S. 747, 767 (1968); Farmers Union Cent. Exchange v. FERC, 734 F.2d 1486, 1501 (1984).

2. See Bernard Tenenbaum and J. Stephen Henderson, "Market-Based Pricing of Wholesale Electricity Service," 4 The Electricity Journal 30 (Dec. 1991).

Congress clearly wanted each class of mail to pay for the costs caused by providing service to the class.

There is no dispute in this case about the desirability of each class of mail paying rates that cover the costs it imposes upon the Postal Service. There is, however, considerable debate about how to define and measure the costs caused by a class of mail and how to reflect those costs in rates. These issues are discussed later in my testimony.

Objective (4): Effect of Rate Increases. This objective allows the Commission to mitigate price increases that would cause "rate shock." Conversely, any rates that would unfairly disadvantage competitors may be set higher. The key consideration in the competitor protection aspect of Objective (4) is that the competitive subclasses be assigned a reasonable share of institutional costs.

Objective (5): Available Alternatives. The availability of alternatives as discussed in this objective is distinct from that addressed in Objective (2), which deals with demand conditions and service quality. Objective (5) effectively is a two-part instruction to the Commission. First, in assigning institutional costs the Commission should protect mailers with few or no choices from excessively high prices, especially if the mailers' lack of alternatives results from the Private Express Statutes. Conversely, the Commission need not be as concerned about a high cost coverage when mailers have readily available alternatives. In these circumstances, the Commission should protect competitors from excessively low postal prices. Put simply, Congress expects the Postal Service to be a fair supplier of monopoly services and a fair competitor in the provision of competitive services.

Objective (6): Preparation Costs. This objective is a more specific aspect of the general objective that postal rates should reflect the cost impact of mail preparation on the Postal Service. It is both fair and economically desirable that postal rates reflect actual cost savings to the Postal Service resulting from mailer worksharing.

Objective (7) Simplicity. A goal of ratemaking, particularly rate design, should be logical relationships within and among the various subclasses of mail.

Objective (8): Educational, Cultural, Scientific and Informational Value. The Act specifies special consideration for certain classes of mail deemed to have educational, cultural, scientific, or informational value.

Objective (9): Other Considerations. The Commission has the authority to take into account other considerations not mentioned in the first eight factors.

The clear conclusion is that the Act requires rates for each subclass to be based on the costs caused by that subclass plus an additional assignment to each subclass of other costs. The additional assignment must be based on the balancing of several specified social objectives. Economic efficiency is a valid consideration, but it is not the primary objective of postal pricing.

B. The Commission's Pricing Approach

For at least a decade, the Commission has been clear about the process for balancing the Act's pricing objectives. The first step is to begin with the existing rate schedule because it embodies the policy trade-offs that have evolved over time. In its Decision in Docket No. R87-1, the Commission stated:

> "The existing rate relationships are presumptively reasonable. They have evolved over the years as a result of extensive analysis, as described in Commission recommended decisions. Our review of existing rates recognizes this evolution and the reasoning which has led to past recommendations."[3]

Second, an adjustment to existing rates is required to reflect the Postal Service's updated revenue requirement and any other factors, such as changes in costing methodology, that change the system-wide cost coverage. The Commission has used a markup index to make this adjustment. The Commission has explained that markup relationships established in an omnibus rate case are a better general guide to "sound ratemaking under the section 3622(b) factors than the rate relationships " emerging from a given case.[4] Postal pricing policy focuses on establishing the relative responsibility of each subclass for the recovery of the Postal Service's non-attributed costs in accordance with the policy objectives set forth in Section 3622(b). It is these markup relationships that represent the

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3. Opinion and Recommended Decision, Docket No. R87-1, p. 367, ¶ 4026. See also id., p. 379, ¶ 4064.

4. Opinion and Recommended Decision, Docket No. R94-1, p. IV-16 (emphasis in original).

prevailing and presumptively reasonable relationships. It follows that a markup index should be used to adjust for inter-rate case differences in system-wide cost coverages.

The third step is to examine whether there have been any material changes in conditions since the last omnibus rate case that, in accordance with the Section 3622(b) factors, would require a change to these adjusted markups. If so, appropriate changes should be made.

The Postal Service has not put forward any major changes in its policy objectives in this case.[5] Moreover, Postal Service witness O'Hara's discussion of his specific rate proposals does not indicate any change in circumstances since Docket No. R94-1 that would require a change in the previously approved markup relationships. I conclude that the Postal Service perceives no major change in the economic, social, political, or any other feature of postal markets, or of its role in those markets, that warrants a major revision in markup relationships. As a consequence, the appropriate policy under the Commission's approach is to base average subclass rates on the previously approved markup pattern.

The Postal Service has not followed this three-step approach. As a result, the Postal Service's proposals for the major package classes -- Express Mail, Priority Mail, and Parcel Post -- do not accord with the Commission's

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5. Docket No. R97-1, Trial Brief of the United States Postal Service, pp. 10-12 (Sept. 29, 1997).

ratemaking policies. I later propose different rate levels for those subclasses that comport with the Commission's approach.

C. Attributable Costs

The Commission's implementation of Section 3622(b)(3) of the statute has been straightforward. In particular, the Commission has first determined the attributable costs of each subclass of mail. The Commission then has applied a markup to attributable costs to reflect the appropriate contribution of each subclass to the Postal Service's institutional costs. The attributable costs of a subclass are those costs that are caused by the provision of service to the subclass. Historically, volume variable costs and specific fixed costs have together comprised attributable costs.[6]

For the first time, the Commission now has in the record an estimate of the incremental cost for each of the various subclasses of mail. As Postal Service witnesses Panzar and Takis agree, incremental costs are caused by providing service to a subclass.[7] As such, the incremental costs of a subclass are attributable to the subclass.

In this case, the Postal Service proposes to depart from the Commission's well-established practice of marking up attributable costs. It proposes instead to determine the rates for each subclass by marking up only the volume variable costs of the subclass. The Postal Service interprets volume

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6. See USPS-T-30, p. 11.

7. USPS-T-11, pp. 8-9; USPS-T-41, p. 3.

variable costs to be short-run marginal costs. On the basis that marginal cost pricing is economically efficient, the Postal Service concludes that volume variable costs should be the starting point for determining economically efficient postal rates. The Postal Service proposes to use its incremental cost estimates solely as a check against cross-subsidy.

The Postal Service's approach represents a significant departure from prior practice and is contrary to the Commission's prior application of the statute. Dr. Panzar's economic logic notwithstanding, the Commission has interpreted the third pricing factor in the statute, Section 3622(b)(3), to require postal rates to include all attributed costs plus a portion of the "other," remaining costs.[8] The Commission has determined that attributable costs include incremental costs and that Congress expected an attributable cost "floor to be constructed for each class [with] the rate built upon it."[9] Consequently, incremental costs should be the basis for markups.

Moreover, there is a good practical reason not to use incremental costs solely as a check against cross-subsidy. Without some markup over incremental cost, measurement error could lead to prices for some services that are below their actual incremental costs. Such a situation would create two types of risk for inefficient entry. First, the price for some subclass or subclasses would be lower than incremental cost because of measurement error. Entry into the market for the provision of such services would be inefficiently deterred because of the low Postal Service price. Second, the

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8. Opinion and Recommended Decision, Docket No. R90-1, p. IV-3.

9. Opinion and Recommended Decision, Docket No. R87-1, p. 103 (¶ 3009); see also id., p. 101 (¶ 3007).

price for some other subclass or subclasses would be too high because of the need for all subclasses in the aggregate to cover the revenue requirement. Entry into the market for the provision of these services would be inefficiently encouraged because of the excessively high prices. The inefficiencies associated with this dynamic market entry process are not taken into account in Dr. Panzar's theory, but they are real world considerations that can lead to real world inefficiencies.

There is another sound economic reason to mark up incremental costs. The short-run marginal cost of providing postal services for a particular subclass of mail changes frequently as a result of changes in volumes, usage mixes, overtime rates, input costs, organizational changes, productivity improvements, general inflation, and other factors. If the primary aim is to achieve economic efficiency, postal prices based on marginal costs necessarily would have to change frequently in order to achieve that goal. Short-run marginal cost pricing may be appropriate if prices could change in a short time period, such as an hour, a day, a month, or a season.[10] When prices do not change in this manner, however, the relevant cost basis for pricing decisions should correspond to the time period during which the rates will be in effect.[11]

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10. Such pricing behavior is often observed in competitive markets. For example, wholesale electric power prices change hourly in response to supply and demand conditions. Under those conditions, price can equal short-run marginal cost, defined as the additional resources required to meet small changes in demand in a short time period.

11. Dr. Panzar has correctly stated the general principle: "The particular version of short-run marginal cost which should be used depends upon a determination of which of the firm's productive inputs can and cannot be varied over the time period *during which the rates are to be in effect.*" Tr. 9/4636 (emphasis added).

The postal rates that emerge from this case are likely to remain in place for two to four years. Accordingly, the relevant costs for pricing purposes are longer run, not short run, costs.[12] Most (if not all) of the specific fixed costs identified by the Postal Service are avoidable in the time span between postal rate cases. For example, advertising expenses are not volume variable, but they can be adjusted within such a time frame. The relevant costing concept for economically efficient pricing should capture such resource adjustments. Unfortunately, the Postal Service's proposed rates are based solely on costs that vary over a much shorter time period.

The long-run incremental cost concept includes the longer run resource adjustments discussed above. Thus, long-run incremental cost (rather than the Postal Service's volume variable costs) is the appropriate basis for postal pricing markups. While not perfect, the Postal Service's estimates of incremental costs are based on this concept.[13] Therefore, the Postal Service's incremental cost estimates should be used as the basis for economically efficient markups.

For the remainder of my testimony, I use the term "attributable cost" as equivalent to incremental costs.

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12. The short run is generally defined as any period shorter than the time it would take to vary all of a firm's productive inputs. The long run, on the other hand, permits all productive inputs to be varied.

13. Better estimates are likely to yield substantially higher incremental costs. See Dianne C. Christensen, Laurits R. Christensen, Charles E. Guy, and Donald J. O'Hara, "U.S. Postal Service Productivity: Measurements and Performance," in Regulation and the Nature of Postal and Delivery Services 237, at p. 249, Michael A. Crew and Paul R. Kleindorfer, eds. (1993), for a method that estimates that attributed cost is about 80 percent of total postal costs, as compared to the Postal Service's estimate of 56 percent in this case.

D. Ramsey Pricing

The Postal Service provides an elaborate study estimating Ramsey prices.[14] However, the Postal Service's pricing witness, Dr. O'Hara, did not rely on such prices for his recommended rates. As a result, a debate over the theoretical virtues of Ramsey Prices in promoting economic efficiency is simply irrelevant.

Moreover, practical considerations limit the usefulness of Ramsey Pricing theory. The data available to the Commission are inadequate to meet the stringent demands of Ramsey Pricing.[15] Furthermore, statutory restrictions, not market forces, result in certain postal customers having relatively inelastic demands and poor

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14. See the Direct Testimony of Postal Service witness Bernstein, USPS-T-31.

15. Professor Baumol and Mr. Sidak have explained that

> . . . to use the full Ramsey analysis to calculate second-best optimal prices, one needs information on the marginal cost of, and the own-price elasticity of demand for, each of the products in question. One probably needs to know the full set of cross-price elasticities as well.
>
> This data requirement is one reason why most regulators and consulting economists have rejected the use of the Ramsey formulas even to provide approximations for the prices that the regulated firm should be permitted to charge for its products. Marginal-cost figures are difficult enough to come by, although reasonably defensible approximations have been provided by firms to regulatory bodies. But up-to-date estimates of the full set of pertinent elasticities and cross-elasticities are virtually impossible to calculate, particularly in markets where demand conditions change frequently and substantially. As a result, *an attempt to provide the regulator with an extensive set of Ramsey prices is likely to be beset by inaccuracies, by obsolete demand data, and by delays* that will prevent the firm from responding promptly and appropriately to evolving market conditions.
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> William J. Baumol and J. Gregory Sidak, Toward Competition in Local Telephony, pp. 38-39 (MIT Press & American Enterprise Institute, 1994) (emphasis added).

alternatives. Ramsey Pricing would therefore place an inequitably high burden of cost recovery on customers who lack good alternatives because of regulation that requires them to buy from a monopolist.

Finally, as discussed above, the Postal Reorganization Act was not intended to elevate economic efficiency to a predominant role in postal ratemaking. In Docket No. R87-1, the Commission summed up the situation very well when it stated,

> . . . we find it inappropriate to rely on the second best pricing [Ramsey Pricing] efforts presented in this case as a representation of economically efficient rates. Those efforts utilize insufficiently reliable price elasticity estimates, are lacking essential cross elasticity data, and do not compensate in any way for Congressional actions which are intended to achieve goals other than the economically efficient allocation of society's resources.[16]

A PRICING MODEL BASED ON THE COMMISSION'S APPROACH

Relative markups reflect the Commission's judgment about how various subclasses should contribute to the recovery of institutional costs. Changes in attributable cost estimates are not by themselves a reason for the Commission to modify its view about the appropriate relative responsibility of each subclass of mail for the recovery of institutional costs.

Dr. O'Hara correctly points out that using prior relative markups when underlying costs have changed will result in changes in relative prices.[17] That is as it

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16. Opinion and Recommended Decision, Docket No. R87-1, p. 377, ¶ 4058.

17. USPS-T-30, pp. 17-19.

should be. Prices should follow costs, and, as a general rule, cost changes should not be negated by changes in the relative responsibility of a class of mail toward the recovery of institutional costs. Therefore, I have used the Commission's relative markups from Docket No. R94-1 to determine the appropriate contribution of the subclasses to the recovery of institutional costs.[18] In so doing, I have included in the cost floor the volume variable costs presented by UPS witness Sellick, under which mail processing labor costs are 100 percent volume variable.[19]

The model I use to determine the rates for all subclasses is described in the Appendix to my testimony. It incorporates all of the major features of the Postal Service's case aggregated at the subclass level, including information that allows the Commission to estimate how volumes in the various subclasses can be expected to change in response to changes in prices. The model does this by incorporating for each of 16 subclasses a demand curve that reflects the demand elasticities estimated by Postal Service witnesses Tolley and Musgrave.[20]

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18. To the extent that the use of relative markups from the previous rate case would result in excessive rate increases, it might be appropriate to consider objective 4 in Section 3622(b) -- the impact of rate increases on mailers -- as a mitigating factor.

19. UPS-T-2, p. 17 (Table 4).

20. For simplicity, the prices and volumes for the remaining subclasses (those associated with mailgrams, international mail, and special services) are assumed to remain constant; these services provide only about six percent of the Postal Service's total revenue requirement. See UPS-Henderson-WP-1, Table 1a.

The model also incorporates marginal cost curves which reflect the cost variabilities shown in Exhibit UPS-T-3A.[21] Each such cost curve reflects the scope economies discussed by Postal Service witnesses Panzar and O'Hara. In particular, the cost structure aggregated at the subclass level is represented by a formula that has two main features: it has a constant cost variability, and it has a simplified form of scope economies depicted as the sum of two volumes -- those of the particular subclass in question, and a parameter representing those of all other subclasses. The difference between volume variable cost and incremental cost permits the estimation of this economies of scope parameter which improves the ability of the aggregated model to track closely the rates that would be produced by the Postal Service's more detailed costing framework.[22]

The results of applying my recommended approach and the Postal Service's approach are presented in Exhibits UPS-T-3B and UPS-T-3C. The overall

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21. The subclass cost variabilities are aggregated from the Postal Service's Cost Segments and Components Report as revised by Mr. Sellick in his testimony.

22. Because the model is aggregated at the subclass level, small discrepancies will arise from two sources. First, because subclass costs are represented by a single formula that responds only to the volumes of the subclass itself -- the parameter representing scope economy volumes is a constant and does not change as the subclass rates or volumes change -- some inaccuracy may occur if the mix of underlying costs changes in response to a subclass rate change. Second, the model does not account for cross-elasticities of demand. Thus, the model does not include any cross effects between or among subclasses (changes in either the volume demanded or in the costs associated with one subclass in response to changes in the volumes of another subclass). Both simplifications should result in only a small loss of accuracy.

revenue requirement of the Postal Service under my recommendation compared to that under the Postal Service's proposal is summarized in Table 1.

Table 1
Overall Revenue Requirement

($ millions)

	Postal Service Proposal	Recommendation
Total Revenue Requirement	$61,616	$61,386
Attributed Cost	34,486[A]	39,215[B]
Non-Attributed Cost	27,130	22,171
Percent Attributed	56.0%	63.9%

(A) Volume Variable Cost
(B) Incremental Cost

Sources: USPS-30B; UPS-Henderson-WP-I, Table 1a.

There are three differences between the Postal Service's proposal and my recommendation. First, replacing Dr. Bradley's estimates of mail processing labor cost variabilities with 100 percent volume variability adds about $3.5 billion to attributable costs and subtracts a like amount from non-attributed costs. Second, using incremental costs rather than volume variable costs as the measure of attributable costs increases attributable costs by about $1.4 billion. Third, there is a minor change in the revenue requirement, which decreases attributable costs by about $0.2 billion. The shift in volume variable costs among the subclasses from one approach to the other accounts for this small difference. For example, if subclasses with higher costs as a result of the cost shift tend to have higher demand elasticities than those

subclasses with lower costs, the overall revenue requirement will tend to decrease because of an overall reduction in volume variable costs. That is, the volume reductions associated with the higher elasticity subclasses would dominate and lead to an overall cost reduction. This accounts for the small reduction in the revenue requirement resulting from my recommendation.

The average rates resulting from my model are shown in Exhibit UPS-T-3B. For comparison purposes, Exhibit UPS-T-3C contains the average rates proposed by the Postal Service.

For First Class letter mail, my approach yields an average rate of 34.7 cents per piece. The Postal Service's approach results in an average rate of 35.2 cents per piece. Both round to an average price of 35 cents per piece. In the case of Standard (A) Commercial Regular mail -- the second largest of the Postal Service's products -- my model results in an average rate of 20.3 cents per piece, whereas the Postal Service proposes a somewhat higher average rate of 21.3 cents per piece.

I have not examined these rates in light of the pricing factors of the statute. In the following section of my testimony, I examine the Express Mail, Priority Mail, and Parcel Post rates resulting from my model in light of those pricing factors.

PRICING RECOMMENDATIONS FOR EXPRESS MAIL, PRIORITY MAIL, AND PARCEL POST

In arriving at my rate recommendations for Express Mail, Priority Mail, and Parcel Post, I have followed the Commission's instruction that existing markup relationships should be maintained unless there is a principled reason for change

based on the nine statutory objectives. As explained below, my analysis of the statutory factors as they pertain to Express Mail, Priority Mail, and Parcel Post indicates that there is no reason to change the established markup relationships. My rate recommendations and the Postal Service's proposals are set forth in Table 2.

Table 2
Average Rates and Cost Coverages

	Postal Service Proposal		Recommendation	
	Average Rate	Cost Coverage	Average Rate	Cost Coverage
Priority Mail	$3.78	192.1%	$4.66	193.1%
Express Mail	$13.41	204.9%	$13.51	118.1%
Parcel Post	$3.34	103.9%	$3.90	107.1%

Sources: Postal Service Proposal -- USPS-T-30, WP II, and USPS-30B.
Recommendation -- UPS-Henderson-WP-I, Table 1a.

A. Express Mail

My recommended average rate for Express Mail is $13.51 with a cost coverage of 118 percent. This compares to the Postal Service's average rate of $13.41.

Dr. O'Hara does not point to any aspect of this subclass that has changed significantly since the last general rate case. Dr. Musgrave concludes that Express Mail is a dynamic service that has changed throughout the 1980's and 1990's

and will likely change in the future.[23] This dynamic character is nothing new. As explained by Dr. Musgrave, this has been an aspect of Express Mail since its inception.[24]

Thus, nothing suggests that the balance of Section 3622(b) pricing objectives which the Commission established in the last omnibus rate case should be changed. Therefore, I find no need to modify the results of applying the markup index to Express Mail.

B. Priority Mail

My recommended average rate for Priority Mail is $4.66 with a cost coverage of 193 percent. This compares to the Postal Service's proposed average rate of $3.78. My recommended rate represents a 32 percent increase. This increase is driven by a 31 percent increase in attributed cost per piece for Priority Mail since Docket No. R94-1.[25]

Apart from cost changes, several additional factors should be considered in arriving at appropriate Priority Mail rates. The higher service standards of Priority Mail support a higher markup than for First Class Letters. Dr. O'Hara points out that Priority Mail "enjoys the same priority of delivery as First-Class letters, receives even

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23. USPS-T-8, p. 29.

24. Id.

25. This 31 percent cost increase represents an increase from the attributable cost per piece of $1.84 found by the Commission in Docket No. R94-1 (Opinion, Appendix G, Schedule 1) to the test year attributable cost per piece of $2.41. UPS-Henderson-WP-I, Table 7a.

greater use of air transportation in view of the two-day service standard between most metropolitan areas, and enjoys the convenience of the collection system for the unzoned two-pound rate packages that constitute a large share of its volume."[26] The Postal Service is also proposing to offer Priority Mail users a delivery confirmation service, thereby making Priority Mail an even more attractive product relative to First Class Mail.

In the last three years, Priority Mail has experienced substantial increases in volume. These increases represent a continuation of Priority Mail's explosive growth rates since the early 1970's. For example, Dr. Musgrave reports that Priority Mail volume has grown about 11 percent annually, on average, in the nineties.[27] Because of its popularity and high growth rates, Priority Mail has become a major offering of the Postal Service. This high growth rate is another indication that Priority Mail is a high value service.

A higher markup for Priority Mail relative to First Class letters is consistent with the Commission's guidance in previous cases.[28] This markup relationship is preserved under my recommendation, which has a markup of 93 percent for Priority Mail compared to 71 percent for First Class Letters. In contrast, the Postal Service proposes to reverse this relationship and would establish a markup for Priority Mail that is lower than the markup for First Class Mail.

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26. USPS-T-30, p. 27.

27. USPS-T-8, p. 12.

28. See Opinion and Recommended Decision, Docket No. R94-1, Appendix G, Schedule 3, p. 1.

The only aspect of Priority Mail that Dr. O'Hara believes is less favorable than First Class letters is Priority Mail's higher elasticity of demand. However, in light of Priority Mail's growth rate, this difference does not seem significant.

My proposed rate increase is not excessive because it is primarily cost driven. In addition, Priority Mail is a competitive service of high value. The ready availability of alternatives to Priority Mail means that the Commission need not be as concerned about a higher-than-average rate increase, as it should be for a monopoly service. Accordingly, I find no reason to suggest that the rate derived from applying the established markup for Priority Mail should be modified.

C. Parcel Post

My recommended average rate for Parcel Post is $3.90, with a cost coverage of 107 percent. This compares to the Postal Service's proposal of $3.34. My recommended rate represents a 28 percent increase.

This increase results from a number of factors. First, the average rate for Parcel Post is already substantially below cost.[29] A 19.4 percent increase is needed just to cover that cost shortfall and reach the Commission's Docket No. R94-1 cost coverage of 107 percent. Second, attributable costs per piece in the test year will be 7.2 percent higher than the attributable costs estimated by the Commission in Docket

29. USPS-T-37, p. 24.

No. R94-1.[30] Thus, to cover costs in the test year and maintain a cost coverage of 107 percent, the average rate must increase by 28 percent.

My recommended rate for Parcel Post is determined, in part, by my adoption of the Postal Service's attribution of 100 percent of Alaska Air costs. The cost causality requirement of the statute indicates that all of these costs should be attributed.

Dr. O'Hara points to only one new pricing factor with respect to Parcel Post -- the lack of access to the collection system due to security concerns.[31] Dr. Tolley discusses two features of the market for packages in which Parcel Post competes. One is competition from various private firms. [32] I am not aware of any major difference in the intensity or nature of this competition since the last rate case. The other feature discussed by Dr. Tolley is the growth in home shopping and electronic commerce.[33] The package market is expanding as a consequence of this change, which would support a more robust markup for Parcel Post.

The Parcel Post markup proposed by the Postal Service is extremely low. Economically efficient pricing requires Parcel Post rates to exceed attributable costs in every year, not just in the test year. With a low markup such as that proposed

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30. This 7.2 percent cost increase represents an increase from the attributable cost per piece of $3.40 found by the Commission in Docket No. R94-1 (Opinion, Appendix G, Schedule 1) to the test year attributable cost per piece of $3.64. UPS-Henderson-WP-I, Table 7a.

31. USPS-T-30, p. 37.

32. USPS-T-6, p. 155.

33. USPS-T-6, p. 156.

by the Postal Service, Parcel Post rates will likely be below attributable cost for much of the time the rates established in this proceeding will be in effect.

Moreover, the Postal Service's proposed one percent contingency allowance is quite small by historical standards. Mr. Tayman explains that the level of the contingency allowance was set in order "to keep rate increases as low as possible and below the level of growth in general inflation."[34] The risk resulting from an inadequate contingency allowance should be reflected in cost coverage decisions, at least for classes (such as Parcel Post) with relatively low cost coverages. The small contingency allowance provides further support for maintaining Parcel Post's cost coverage at the level established by the Commission in Docket No. R94-1.

My proposed rate increase for Parcel Post is not excessive given that it is based on increases in its cost. Concern about the size of a rate increase cannot be allowed to become a shield against the adoption of appropriate cost causation principles. Moreover, Parcel Post is a competitive service with readily available alternatives. Finally, the one percent contingency allowance and the need to ensure that Parcel Post rates exceed attributable costs after the test year requires, at a minimum, that the Commission's established relative markup for Parcel Post be maintained.

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34. USPS-T-9, p. 38.

CONCLUSIONS

Attributable costs, not merely volume variable costs, are the appropriate basis for applying markups. The appropriate measure of attributable cost is long-run incremental cost. Moreover, the Postal Service has not followed the Commission's guidance of starting with the previously approved markups and determining whether changed circumstances require any modifications to these.

On the basis of the Commission's established pricing procedures, my recommendations for Express Mail, Priority Mail, and Parcel Post are as follows:

	Average Rate	Percent Increase	Cost Coverage
Priority Mail	$4.66	32%	193.1%
Express Mail	$13.51	4%	118.1%
Parcel Post	$3.90	28%	107.1%

APPENDIX

Overview

The purpose of the pricing model is to determine what the prices of the subclasses would be by following the Postal Rate Commission's (PRC) pricing procedure. In addition to my calculations based on the PRC procedure, I have run the model using the Postal Service's proposal for comparison purposes.

The basis for my prices is the markups from the PRC's decision in the R94-1 case, where it indicated cost coverages, and hence cost markups, for the various subclasses (PRC Opinion and Recommended Decision, Appendix G, Schedule 1). I keep the relative size of these markups the same, and scale the markups to solve the model. The cost base is the incremental cost of a subclass, and the markup is applied to the incremental cost per unit to determine the price.

A change in price will lead to a change in volume, and a change in volume will lead to a change in cost. To capture such effects, each subclass in the model has a demand function and a cost function. The demand function relates how volume changes as the price of that subclass changes, and the cost function shows how the variable cost of a subclass changes as the volume changes.

For the sake of simplicity, the model includes only sixteen subclasses. This means that the supply and demand curves are considered to be "active" for these 16 subclasses, so that volume, prices, and costs are adjusted to reflect the Commission's R94-1 markups. The remaining subclasses (Mailgrams,

International Mail, and all Special Services) are "inactive," so that the volumes, prices, and costs are the same as that proposed by the Postal Service. These inactive subclasses collectively account for about six percent of total revenue. Furthermore, Free Mail has a price of zero by definition, so it is not in the model.

Initial Point

The model's initial point is based on numerical values taken from testimony, or from modifications to testimony. These values include the volume variable cost, incremental cost, volume, revenue, price, and specific fixed cost for each subclass, as well as total revenue, total cost, and other revenues and costs for the Postal Service as a whole. The demand function, the cost function, and the incremental cost function are all calibrated so as to pass through an initial point. The initial point for the demand function is the Postal Service's Test Year After Rates case (subclass volume and subclass average rate). The initial point for the cost curves is based on TYAR subclass volume and TYAR cost as adjusted by UPS witness Sellick (UPS-T-2). The initial cost point differs from that of the Postal Service proposal because of Mr. Sellick's adjustments to volume variable costs and specific fixed costs. As discussed in Mr. Sellick's testimony, the most significant adjustment is to use 100 percent variability for Cost Segment 3.1

Demand Function

The demand function for each subclass is the relationship between price and volume for a particular subclass. For a given price, one can determine what the volume of mail will be. On the other hand, for a given volume, one can determine what the price must be to cause that much volume. The demand function I use has the constant elasticity functional form:

$$v = Ap^{-B} \quad (1)$$

This functional form has the property that no matter what the volume, the elasticity remains the same. The volume of mail for a subclass is v, the price per unit for that subclass is p, and A and B are parameters that remain constant.

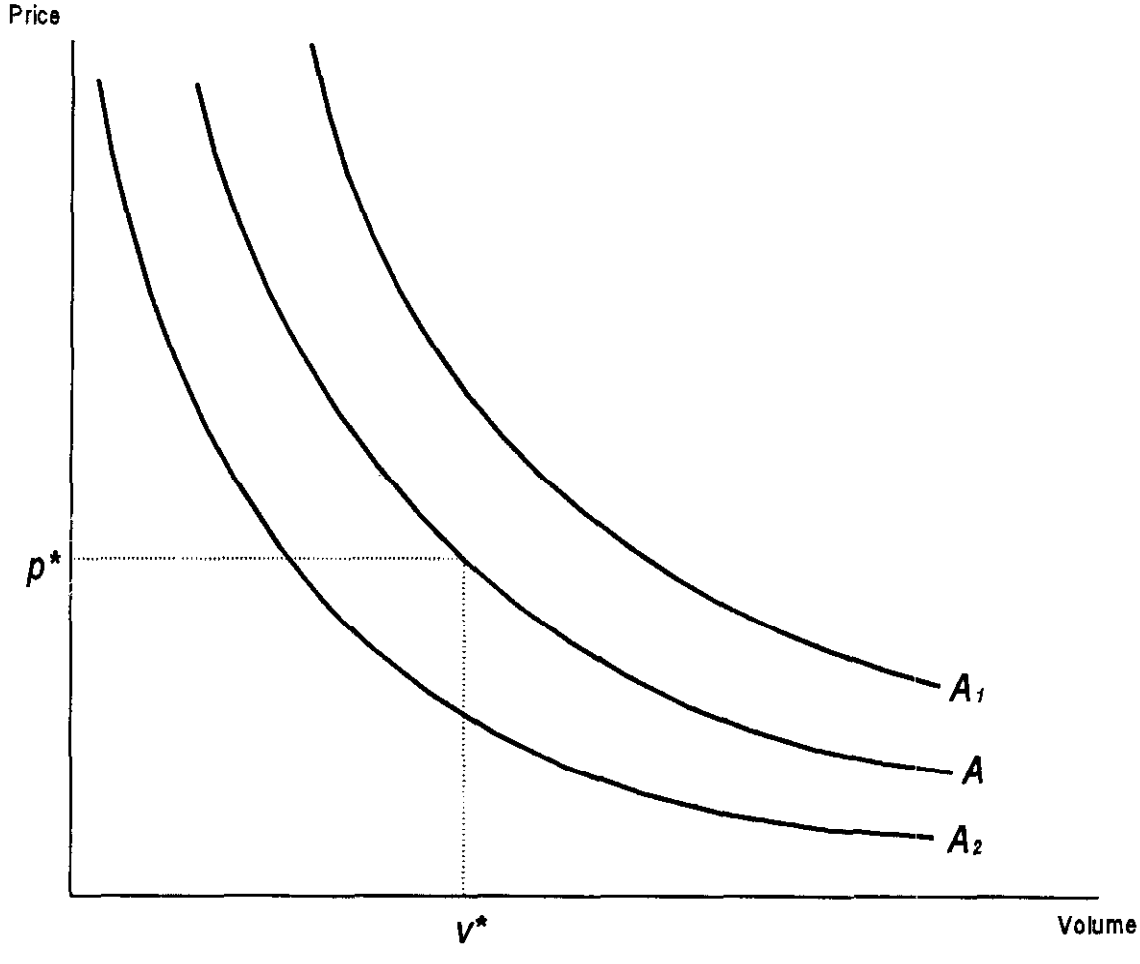
The parameter B is the price elasticity of demand for a subclass. Estimates of this parameter are provided by witness Musgrave (USPS-T-8) for Priority Mail and Express Mail, and witness Tolley (USPS-T-6) for all other subclasses.

The parameter A is a scale factor that allows the demand curve to pass through the initial volume and price combination. The diagram below illustrates this idea. At a price of p^*, we know from witness O'Hara's testimony that the volume will be v^*. The curve corresponding to A_1 has a volume that is too large at p^*, and the curve corresponding to A_2 has a volume that is too small at p^*. The curve corresponding to A has the correct volume at p^*. Selection of the parameter

A, then, ensures that the subclass demand curve passes through the Postal Service's TYAR volume and price point.

Figure 1

Demand Function



Dr. O'Hara's testimony (USPS-T-30) includes revenue and volume information on the After Rates case, which implies a price. Given the price, volume, and *B*, it is a simple matter to compute *A*.

Total Variable Cost Function

The total variable cost function is the relationship between total variable cost and volume for a particular subclass. The function determines the total variable cost of handling a volume of mail. Total variable costs do not include specific fixed costs. The cost function I use has the constant elasticity functional form:

$$t.v.c. = a\,(z + v)^b \qquad (2)$$

This functional form has the property that no matter what the volume, the elasticity is always the same. The constant elasticity functional form is common in the Postal Service's proposals. In the equation above, the *t.v.c.* is the total variable cost for a subclass, v is volume of the subclass, and *a*, *b*, and *z* are parameters that remain constant for a given subclass. Note that the lower case parameters *a* and *b* in the total variable cost function are not the same as the upper case parameters *A* and *B* in the demand function.

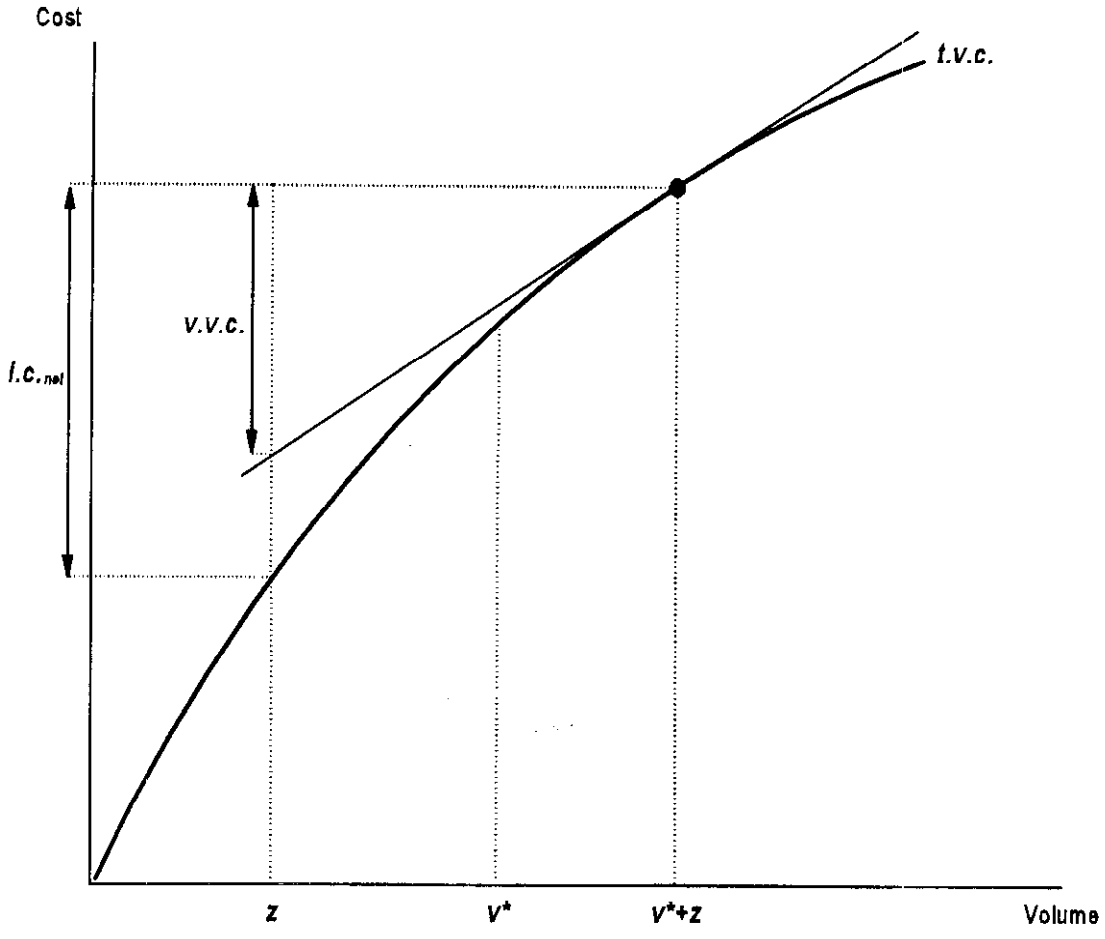
The parameter *b* is the cost elasticity. It is the percentage change in total variable cost for a one percent change in volume. The cost elasticity is calculated at the initial point, and does not change as the numbers in the model

change. It is a weighted average of the cost elasticities of the Cost Components. The calculation of the cost elasticity is described fully in Workpaper II.

The parameters *a* and *z* are determined jointly. Parameter *a* is a scale factor for the cost curve and *z* is the volume so that two things are true: 1) the difference between the total variable cost for v^*+z and the total variable cost for *z* equals the net incremental cost (incremental cost net of specific fixed costs) at the initial point ($i.c._{net}^*$), and 2) the marginal cost times the volume at the initial point (v^*) equals the volume variable cost at the initial point.

Figure 2 illustrates volume variable cost and net incremental cost. The exact derivation of *a* and *z* is discussed in my Workpaper I.

Figure 2
Cost Function



Three other cost functions that are related to the total variable cost function and are used in the calculation of the model are the marginal cost function, the volume variable cost function, and the net incremental cost function.

The marginal cost (unit volume variable cost) is the derivative of the total variable cost function:

$$m.c. = ab\,(z+v)^{b-1} \quad (3)$$

The volume variable cost is the marginal cost times the volume:

$$v.v.c. = abv\,(z+v)^{b-1} \quad (4)$$

The net incremental cost is the difference between the total variable cost of the subclass with *v*, and the total variable cost without *v*.

$$i.c._{net} = a\,(z+v)^{b} - az^{b} \quad (5)$$

Incremental Cost

Because the Base Year volume variable costs in my recommended approach differ from those in the Postal Service's proposal, the incremental costs differ also. I have recalculated incremental cost for the Base Year using witness Takis's linked electronic spreadsheets, found in Library References H-297 and H-198. The results of the Base Year calculations were rolled forward to the Test Year using witness Takis's method. A full description of my incremental cost calculation is found in my Workpaper III.

Solving the Model

The model finds a price equilibrium (an "After Rates" case in which volumes are adjusted for price effects) by scaling the Commission's R94-1 markups so as to cover the Postal Service's revenue requirement.

It does this by changing two types of numbers. The first is a single number, called the cost markup scaling factor. The second is a set of numbers comprising the volumes of the 16 individual subclasses discussed above.

Cost Markup Scaling Factor: If the Postal Service simply adopted the markups from the R94-1 decision and applied them to 1998 costs, revenue would not necessarily cover costs. Conversely, revenue might also be greater than costs. Because the Postal Service must meet the break-even requirement, the markups must change so that cost exactly equals revenue. To preserve the relative size of the markups, I have multiplied each markup by the same number. This number is called the cost markup scaling factor.

For example, if the markup for subclass A was .8 in the R94-1 decision, and the markup for subclass B was .2 in the R94-1 decision, and the cost markup scaling factor is 1.5, then the new markups are 1.2 for subclass A and .3 for subclass B. Since both markups were multiplied by the same scaling factor, the ratio of A to B is 4 in both cases.

Volume: The model adjusts the volume of each of the 16 subclasses independently of the volume of any other subclass. This adjustment allows the model to change the markup for each subclass (by changing the distance between the demand and supply functions at a given volume) so as to correspond to the relative R94-1 markup. The model iterates between volumes and the cost markup scaling factor until it finds a solution. The model is set up so that the volume of each subclass affects the subclass price in two ways -- one from the demand function, and the other from the cost function. The demand function establishes a unique price for every volume. Independently, the cost function is marked up, which provides a second view of the price. The volume of a subclass is adjusted until the price computed each way is the same.

Workpaper I contains a complete description of how the model is solved.

Exhibit UPS-T-3A
Cost Variability by Subclass

	Recommended Approach [1]	Postal Service Proposal [2]
First Class Mail		
Total Letters	0.703	0.630
Total Cards	0.665	0.603
Priority Mail	0.552	0.500
Express Mail	0.543	0.484
Periodicals		
In County	0.508	0.477
Nonprofit	0.609	0.562
Classroom	0.693	0.616
Regular-Rate	0.659	0.599
Standard Mail A		
Commercial Regular	0.681	0.612
Commercial ECR	0.529	0.501
Nonprofit	0.700	0.629
Nonprofit ECR	0.594	0.554
Standard Mail B		
Parcel Post	0.621	0.570
Bound Printed Matter	0.473	0.429
Special Rate	0.571	0.512
Library Rate	0.566	0.502

Sources:
[1] UPS-Henderson-WP-I, Table 3
[2] UPS-Henderson-WP-I, Table 3

Exhibit UPS-T-3B
Alternative Markups
Recommended Approach

	Price ($) [1]	Volume (millions) [2]	Revenue ($ millions) [3]	Volume Variable Cost ($ millions) [4]	Incremental Cost ($ millions) [5]	Markup (%) [6]	Price Increase from 1998 BR (%) [7]
First Class Mail							
Total Letters	0.347	95,862	33,256	18,536	19,406	71.4	1.8
Total Cards	0.162	6,550	1,060	763	784	35.2	-13.1
Priority Mail	4.660	980	4,568	2,213	2,365	93.1	31.6
Express Mail	13.509	62	838	485	710	18.1	4.4
Periodicals							
In County	0.100	866	87	83	85	2.6	10.6
Nonprofit	0.175	2,113	370	351	356	3.9	14.2
Classroom	0.335	29	10	9	9	6.5	62.1
Regular-Rate	0.285	6,959	1,981	1,698	1,714	15.6	25.1
Standard Mail A							
Commercial Regular	0.203	38,335	7,784	5,898	5,956	30.7	-3.0
Commercial ECR	0.146	29,211	4,252	2,025	2,110	101.5	-0.1
Nonprofit	0.122	10,620	1,297	1,224	1,238	4.8	6.1
Nonprofit ECR	0.073	2,594	191	136	136	39.8	-12.1
Standard Mail B							
Parcel Post	3.898	202	787	733	735	7.1	27.6
Bound Printed Matter	0.915	574	525	388	389	35.1	5.3
Special Rate	1.550	210	325	311	312	4.4	-12.2
Library Rate	2.024	27	54	54	54	0.8	26.8
TOTAL*		197,974	61,300	37,786	39,215	56.3	

Sources:
[1] UPS-Henderson-WP-I, Table 1a
[2] UPS-Henderson-WP-I, Table 1a
[3] UPS-Henderson-WP-I, Table 1a
[4] UPS-Henderson-WP-I, Table 1a
[5] UPS-Henderson-WP-I, Table 1a
[6] UPS-Henderson-WP-I, Table 1a
[7] UPS-Henderson-WP-I, Table 1a
* Includes all Subclasses

Exhibit UPS-T-3C
Postal Service's Proposal

	Price ($) [1]	Volume (millions) [2]	Revenue ($ millions) [3]	Volume Variable Cost ($ millions) [4]	Incremental Cost ($ millions) [5]	Markup (%) [6]	Price Increase from 1998 BR (%) [7]
First Class Mail							
Total Letters	0.352	95,551	33,615	16,806	18,284	100.0	3.3
Total Cards	0.197	5,523	1,089	592	608	83.8	5.9
Priority Mail	3.777	1,152	4,353	2,266	2,682	92.1	6.7
Express Mail	13.412	63	841	411	705	104.9	3.6
Periodicals							
In County	0.093	902	84	81	83	2.8	2.4
Nonprofit	0.159	2,161	343	331	336	3.4	3.5
Classroom	0.222	47	11	13	13	-17.4	7.5
Regular-Rate	0.236	7,148	1,689	1,578	1,600	7.0	3.8
Standard Mail A							
Commercial Regular	0.213	37,628	8,022	5,192	5,303	54.5	1.8
Commercial ECR	0.150	28,686	4,304	1,885	1,969	128.3	3.0
Nonprofit	0.128	10,551	1,351	1,107	1,123	22.1	11.3
Nonprofit ECR	0.078	2,571	201	125	126	61.0	-6.3
Standard Mail B							
Parcel Post	3.336	235	783	753	761	3.9	9.2
Bound Printed Matter	0.913	575	525	346	347	51.6	5.1
Special Rate	1.757	201	352	257	258	37.2	-0.4
Library Rate	1.825	29	52	49	49	6.8	14.4
TOTAL*		195,801	61,530	34,486	37,043	78.4	

Sources:
[1] UPS-Henderson-WP-I, Table 2a
[2] UPS-Henderson-WP-I, Table 2a
[3] UPS-Henderson-WP-I, Table 2a
[4] UPS-Henderson-WP-I, Table 2a
[5] UPS-Henderson-WP-I, Table 2a
[6] UPS-Henderson-WP-I, Table 2a
[7] UPS-Henderson-WP-I, Table 2a
* Includes all Subclasses